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CENTRAL INTELLIGENCE AGENCY
INFORMATION REPORT

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SUBJECT Berlin-Type Section Blocking System

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NO. OF ENCLS. 2- (Schematic diagram; explanatory not in German and English)
(LISTED BELOW)

DATE OF ACQUISITION DOCUMENT HAS AN ENCLOSURE ATTACHED.

SUPPLEMENT TO REPORT NO.

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1. A schematic diagram representing the conversion of the double-track section blocking system to single-track operations as applied in the Berlin railroad district with pertinent explanatory notes was obtained at the Directorate General, Railroads, Berlin. The diagram of a modified section blocking system was copied from an original blueprint. For explanatory notes, see Annex 2. The lines in the Berlin railroad district provided with Berlin-type section blocking facilities were reported previously.
2. The attached reports are forwarded to you on loan.

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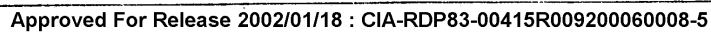
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Explanatory Notes on the Berlin-Type Section Blocking
(Translation)

1. The closing or interruption of the circuit is indicated by the following symbols: indicating a closed circuit, standing for an interrupted circuit. In addition to the standard four-field system the red-boxed units and the units underlined in red are required for the Berlin-type section blocking system. The starting field is simultaneously used as co-operating field. On the attached schematic diagram starting field x is blocked, i.e. signal x is locked in stop position, while starting field U is clear and signal U is in clear position.

- a. Circuit arrangement while a train is moving toward signal U:

Track locking device U is applied, contact Ff is interrupted, magnetic switch 2 becomes dead and by interrupting contact 2 31/32 continues to prevent the supply of current. After the train has passed signal U, starting field U is blocked. Circuit connections: From J.W. via

- (1) A contact at the starting field (switched over)
- (2) Field coils, starting field U
- (3) Contact 11/12 (base position) to the neighboring Block Station II
- (4) Contact at end field (base position)
- (5) Field coils end field W
- (6) Contact at end field (base position)
- (7) Contact 51/52 (base position) to Block Station I
- (8) Contact 31/32 (base position)
- (9) Contact at starting field U (switched over) back to I. W.

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b. Circuit arrangement for back blocking.

From I.W. Block Station II via

- (1) Contact at end field W (switched over)
- (2) Contact for semaphore arm in base position
- (3) Contact at end field W switched over
- (4) Field coils end field W
- (5) Contact 61/62 (base position) to Block Station I
- (6) Contact at starting field U in base position
- (7) Field coils starting field U
- (8) Contact at starting field U (base position)
- (9) Contact 31/32 to Block Station II
- (10) Contact 51/52
- (11) Contact at end field W (switched over) to I.W.

The train after passing U releases the track-locking device. Contact Ff is closed again; starting field U is blocked and thus the plunger and locking bolt contact in the circuit of magnetic switch. 2 is closed again. Magnetic switch 2 is operated and after de-blocking starting field U the original position is restored.

c. Transmission of clear signal from I to II (from starting field U to starting field X):

By operating the lever for starting field U the early closing contact of starting field U in the circuit of magnetic switch 1 is closed. Magnetic switch 1 is activated thus causing the four contacts of magnetic switch 1 in the section blocking circuit of Block Station I to be switched over when starting field U is blocked.

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d. Circuit arrangement:

From I.W. to Block Station I

- (1) Contact at starting field U switched over
- (2) Field coils starting field U
- (3) Contact 21/22 switched over
- (4) Contact 51 1 to Block Station II (51/52 interrupted)
- (5) Contact at starting field X in base position
- (6) Field coils starting field X
- (7) Contact at starting field X in base position
- (8) Contact 11/12 1 (base position) to Block Station I
- (9) Connection 61 (61/62 interrupted)
- (10) Contact 41/42 1 switched over
- (11) Contact at starting field U switched over, back to I.W.

Now signal U is fixed in its base position by the blocked signal locking device, while signal X, by de-blocking of the starting field X (co-operating field), has become free. In the circuit of magnetic switch 2 at Block Station I the locking bolt contact of starting field is switched over and is thus closed. The contact of starting field X previously closed in the circuit of magnetic switch 2 of Block Station II is now interrupted ().

Explanation of abbreviations and symbols:

I.W. - A.C. Inductor
I.W. - Outgoing current
I.W. - Return current

The German original of the explanatory notes is attached. For symbols, which were not transferred to translation, see original German text.

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Annex to

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Streckenblock für eingleisigen Betrieb

Berliner Form

Die Schaltung ist nach dem Prinzip der "Pfeilschen Kurzschaltung" gezeichnet: X = Kontakt geschlossen = Stromdurchfluss - X = Kontakt geöffnet = kein Stromdurchfluss.

Zusätzlich zur normalen "4 Felder" Form sind die rot umrahmten und rot nachgezeichneten Teile erforderlich.

Das Anfangsfeld gilt gleichzeitig als Erlaubnisfeld - ~~die mechanische und die elektrische Festsperre ist unwirksam gemacht.~~

Im vorliegenden Fall ist Anfangsfeld x geblockt, also Signal x durch den Signalverschluss in der Haltlage verschlossen. Anfangsfeld U ist entblockt, also Signal U frei.

Zugfahrt auf Signal U:

Fahrstrassenfestlegung "u" wird geblockt - Kontakt Ff ϕ wird getrennt - Magnetschalter 2 \boxtimes wird stromlos und fällt ab und trennt durch Unterbrechung des Kontaktes 2 \boxtimes 31/32 auch weiter die Stromzufuhr ab. Nachdem Zug auf Signal U ausgefahren ist wird Anfangsfeld U geblockt. Stromschluss: von $\blacktriangleright \rightarrow$ J.W. über

- 1) A-O Kontakt am Anfangsfeld (umgeschaltet)
- 2) Feldspulen, Anfangsfeld U
- 3) Kontakt 11/12 \boxtimes (Grundstellung) zur benachbarten Blockstelle II
- 4) Kontakt am Endfeld E-O (Grundstellung)
- 5) Feldspulen Endfeld U W
- 6) Kontakt am Endfeld E-O (Grundstellung)
- 7) Kontakt 51/52 \boxtimes 4 (Grundstellung) zu eigener Blockstelle I zurück
- 8) Kontakt 31/32 \boxtimes 4 (Grundstellung)
- 9) Kontakt am Anfangsfeld U (umgeschaltet) zum J.W. $\rightarrow \blacktriangleleft$ zurück

Die Rückblockung:

Von J.W. $\blacktriangleright \rightarrow$ Blockstelle II über

- 1) Kontakt am Endfeld W E-O (umgeschaltet)
- 2) Signalflügelkontakt (Grundstellung)
- 3) Kontakt am Endfeld W E-O (umgeschaltet)
- 4) Feldspulen Endfeld W
- 5) Kontakt 61/62 \boxtimes 4 (Grundstellung) zur Blockstelle I
- 6) Kontakt am Anfangsfeld U E-O (Grundstellung)
- 7) Feldspulen Anfangsfeld U
- 8) Kontakt am Anfangsfeld U E-O (Grundstellung)
- 9) Kontakt 31/32 \boxtimes 4 zur Blockstelle II
- 10) Kontakt 51/52 \boxtimes 4
- 11) Kontakt am Endfeld W E-O (umgeschaltet) zum J.W. $\rightarrow \blacktriangleleft$ zurück.

Nach der Ausfahrt U hat die Fahrstrassenfestlegung ausgelöst - Kontakt Ff ϕ ist wieder geschlossen, das Anfangsfeld U wurde geblockt und damit Druck- und Riegelstangen-Kontakt im Stromkreis des Magnetschalter 2 wieder geschlossen. - Magnetschalter 2 ist angezogen und nach Entblockung des Anfangsfeldes U die Grundstellung wieder hergestellt.

Abgabe der Erlaubnis von I nach II:

(vom Anfangsfeld U nach Anfangsfeld x)

Beim Drücken des Anfangsfeldes U wird der fröhschliessende Kontakt Anfangsfeld U E-O ~~gesch.~~ ~~Magnetschalter~~ - im Stromkreis des

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
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








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Magnetschalters ~~2~~ 1 geschlossen - Magnetschalter ~~2~~ 1 zieht an. Dadurch sind beim Blocken des Anfangsfeldes U (Erlaubnisabgabe) die 4 Kontakte des Magnetschalters ~~2~~ 1 im Blockstromkreis (Blockstelle I) umgeschaltet.

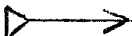
Stromschluss:

Von J.W.  Blockstelle I

- 1) Kontakt am Anfangsfeld U  (umgeschaltet)
 - 2) Feldspulen Anfangsfeld U
 - 3) Kontakt 21/22 ~~2~~ 1 (Umgeschaltet)
 - 4) Anschluss 51 ~~2~~ 1 (51/52 unterbrochen) zur Blockstelle II
 - 5) Kontakt am Anfangsfeld X  (Grundstellung)
 - 6) Feldspulen Anfangsfeld X
 - 7) Kontakt am Anfangsfeld X  (Grundstellung)
 - 8) Kontakt 11/12 ~~2~~ 1 (Grundstellung) zur Blockstelle I
 - 9) Anschluss 61 ~~2~~ 1 (61/62 unterbrochen)
 - 10) Kontakt 41/42 ~~2~~ 1 (umgeschaltet)
 - 11) Kontakt am Anfangsfeld U  (umgeschaltet) zum J.W.  zurück
- Jetzt ist Signal U in der Grundstellung durch den geblockten Signalverschluss festgelegt und Signal X durch Entblocken des Anfangsfeldes X (Erlaubnisfeld) frei.
- Im Stromkreis des Magnetschalters ~~2~~ 2 Blockstelle I ist der Riegelstangenkontakt des Anfangsfeldes  umgeschaltet  also geschlossen, der im Stromkreis des Magnetschalters ~~2~~ 2 Blockstelle bisher geschlossene  Kontakt des Anfangsfeldes X ist jetzt getrennt .

Bezeichnungen-Erläuterungen:

J.W. = Induktor-Wechselstrom

J.W.  Stromausgang

J.W.  Stromrückkehr.

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